

Unit - II

2. a) What is duality? Explain it. (3+8+5)
- b) Prove that :
- i) $XYZ + XYK + \bar{X}Y\bar{Z} + ZK + Y\bar{K} = Y + ZK$
- ii) If $Y\bar{Z} + \bar{Y}Z = X$ then $X\bar{Z} + \bar{X}Y = Y$
- c) Write short note on 'Universal logic Gates'.

OR

2. a) Minimize the following function using Quine Mc Clusky method:
- $F(A,B,C,D) = \Sigma (1,2,4,5,9,11,12,13)$ (8+8)
- b) Write short notes on : Minterm and Maxterm.

Unit - III

3. a) Explain the Interfacing of logic families. (10+6)
- b) Explain the working of Tristate TTL NAND logic.

OR

3. a) Explain a basic ECL NOR/OR gate circuit. (8+8)
- b) Write short note on complementary MOS logic.

Unit - IV

4. a) Design a BCD to Excess-3 code converter. (8+8)
- b) Implement a full subtractor using half subtractors.